Amendments to the Claims:

Please amend the following Claim(s): 1, 18. 19. 29, 37 and 49.
Please cancel the following claim(s):.

1. (currently amended) An imaging device for capturing optical image data, the device comprising:

an imager for generating an image signal;

a memory component that receives the image signal from the imager and stores the image signal as image data;

a processor operating according to a multi-tasking operating system;

a histogram processing module executed by the multi-tasking operating system as a low priority task that analyzes the image data in the memory component and calculates a target contrast; and

an imager control module executed by the multi-tasking operating system concurrently with the histogram processing module, the imager control module being executed as a high priority task that sets a gain and exposure for the imager based on the target contrast calculated by the histogram processing module.

2. (Original) The imaging device of Claim 1, wherein the imager generates the image signal from multi-dimensional symbologies.

3. (Previously Presented) The imaging device of Claim 1, wherein the multi-tasking operating system is a real-time operating system and wherein the imager control module is executed as a real-time thread.

4 – 6. (Cancelled)

7. (Previously Presented) The imaging device of Claim 1, wherein the imager control module is implemented in a high priority thread.

8. (Cancelled)

9. (Previously Presented) The imaging device of Claim 1, wherein the imager control module is implemented in an interrupt service routine.

10. (Previously Presented) The imaging device of Claim 1, wherein the histogram processing module is implemented in a low priority thread routine.

11 - 13. (Cancelled)

14. (Previously Presented) The imaging device of Claim 1, further comprising a Direct Memory Access (DMA) controller that receives the image signals from the imager, responds to an image capture command from the histogram processing module and transfers captured image signals into the memory component.

15. (Cancelled)

16. (Original) The imaging device of Claim 1, further comprising a programmable logic device that serves as an interface between the imager and the processor.

17. (Previously Presented) The imaging device of Claim 16, wherein the programmable logic device comprises a DMA controller that receives the image signals from the imager, responds to an image capture command from the histogram processing module and transfers captured image signals into the memory.

18. (currently amended) An imaging device for capturing optical image data, the device comprising:

an imager for generating an image signal;

a memory component that receives the image signal from the imager and stores the image signal as image data; and

a processor operating pursuant to a multi-tasking operating system that concurrently executes a high priority software-exclusive module for real time control of the imager ~~and~~ with a lower priority software-exclusive module that examines the image data and provides feedback to the high priority software-exclusive module facilitating setting of a gain and exposure of the imager.

19. (currently amended) A method for exposure control in a multi-dimensional imaging device, the method comprising:

executing, as a high priority task in a multi-tasking operating system, a first software-exclusive module that controls exposure and gain settings in the imager in response to an end of frame signal;

generating, in the first software-exclusive module, a captured contrast setting, wherein contrast is defined as the product of the exposure setting and the gain setting;

executing, concurrently with the the first software-exclusive module, ~~as a low priority task in the multi-tasking operating system,~~ a second software-exclusive module that calculates a target contrast setting in response to the end of frame signal, the captured contrast setting and stored image data, the second software-exclusive module being executed as a low priority task;

generating, in the first software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting; and

implementing the subsequent exposure and gain setting in the imager.

20 - 28. (Cancelled)

29. (currently amended) A program storage device readable by a processor, tangibly embodying a program of instructions executable by the processor to perform a method for exposure control in a multi-dimensional imaging, the method comprising:

generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager, wherein contrast is defined as the product of exposure setting and gain setting;

calculating, in a low priority software-exclusive module concurrently executed with the high priority software-exclusive module, a target contrast setting in response to the end of frame signal from the imager, the captured contrast setting and stored image data;

generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting; and

implementing the subsequent exposure and gain setting in an imager of the multi-dimensional imaging device.

30. (Previously Presented) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in an interrupt service routine module.

31. (Previously Presented) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in a high priority thread module.

32. (Previously Presented) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in a high priority task module.

33. (Previously Presented) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises calculating in a low priority task module.

34. (Previously Presented) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises calculating in a low priority thread module.

35. (Previously Presented) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises implementing histogram processing to calculate a target contrast setting.

36. (Cancelled)

37. (Currently Amended) A portable bar code reader for capturing optical image data~~:~~, the ~~device~~ portable bar code reader comprising:

an imager for generating an image signal based on a bar code;

a memory component that receives the image signal from the imager and stores the image signal as image data: and

a central processing unit operating in accordance with a multi-tasking operating system and a plurality of concurrently executed software based imaging modules to calculate and adjust settings of the imager based on an analysis of the image signals stored in the memory component wherein modules that adjust setting of the imager are given a higher priority than modules that calculate desired settings of the imager.

38. (Previously Presented) The bar code reader of Claim 37, wherein the software based imaging modules comprise a first software-exclusive module that controls the exposure and gain setting in the imager and a second software-exclusive module that implements computations in response to exposure data transmitted from the first software-exclusive module to determine a targeted exposure and gain setting.

39. (Previously Presented) The bar code reader of Claim 38, wherein the second software-exclusive module implements computations in response to exposure data transmitted from the first software-exclusive module and image data transmitted from the memory component.

40. (Cancelled)

41. (Previously Presented) The bar code reader of Claim 38, wherein the first software-exclusive module is implemented in a high priority thread.

42. (Previously Presented) The bar code reader of Claim 38, wherein the first software-exclusive module is implemented in a high priority task.

43. (Previously Presented) The bar code reader of Claim 38, wherein the first software-exclusive module is implemented in an interrupt service routine.

44. (Previously Presented) The bar code reader of Claim 38, wherein the second software-exclusive module is implemented in a low priority thread routine.

45. (Previously Presented) The bar code reader of Claim 38, wherein the second software-exclusive module is implemented in a low priority task routine.

46. (Previously Presented) The bar code reader of Claim 38, wherein the second software-exclusive module includes histogram processing.

47. (Previously Presented) The bar code reader of Claim 38, wherein the first software-exclusive module is implemented in ~~a~~ an interrupt service routine and the second software-exclusive module is implemented in a low priority task routine.

48. (Cancelled)

49. (Currently amended) A barcode imaging device for capturing information, the device comprising:

an optics imaging system that captures an image of a two-dimensional barcode data symbol;

an imaging sensor in communication with the optics imaging system that receives the image from the optics imaging system and converts the image to an electrical signal representative of image data;

a memory storage element in communication with the sensor that stores the image data: and

a central processing unit (CPU) in communication with the imaging system, the imaging sensor and the storage element, wherein the CPU implements a multitasking operating system that concurrently executes a first high priority software-exclusive module that provides imaging system control processing and a second low priority software-exclusive module that recognizes and decodes the image data.

50. (Previously Presented) The device of Claim 49, wherein the multi-tasking operating system implemented by the CPU of the barcode imaging device further executes a third software-exclusive module that performs calculations on the image data.

51. (Previously Presented) The device of Claim 49, wherein the first software-exclusive module is further defined as controlling imager exposure time.

52. (Previously Presented) The device of Claim 49, wherein the first software-exclusive module is further defined as synchronized with timing of the imager.

53. (Previously Presented) The device of Claim 49, wherein the barcode imaging device is further defined as a portable barcode imaging device.